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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,416	10/26/2001	David J. Kunst	A-70429/ENB	9958

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EXAMINER

DEB, ANJAN K

ART UNIT	PAPER NUMBER
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2858

DATE MAILED: 02/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/045,416	KUNST ET AL.	
	Examiner	Art Unit	
	Anjan K Deb	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/26/2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 32-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9, 11-17, 21-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson (US 5,059,916).

Re claim 1, Johnson discloses apparatus for determining a state of a measurable circuit element 14 having a plurality of states and a different impedance (variable resistance) in each state comprising a replicate circuit (35,34,32,33) configured to generate an adjustable test current and a trim determination circuit (36,14) coupled with the replication circuit for receiving the adjustable test current the trim determination circuit including the measurable circuit element 14 and utilizing the adjustable test current to indicate at least one of the states (resistance) of the measurable circuit element 14 (column 3 lines 50-64)(Fig. 5).

Re claim 2, Johnson discloses replicate circuit comprising resistors (33,34) having similar electrical characteristic (resistance) providing feedback 31 indicative of the amount of adjustable test current (Fig. 5).

Re claim 3, Johnson discloses circuit generates a test current (10x) which is proportional to the adjustable test current (x) whereby the test current (10x) is passed through the measurable

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circuit element 14 such that a first voltage drop occurs across the measurable circuit element that is proportional to the impedance of the measurable circuit element.

Re claim 4, Johnson discloses measurable circuit element 14 has a lower voltage potential terminal whereby a voltage indicative of the state of the measurable circuit element 14 is measurable at the lower voltage potential terminal (-ve terminal of op-amp 38).

Re claim 5, Johnson discloses circuit has a scaled reference current source for generating a scaled reference current source 17 (V) and a dependent measurable current source 36 coupled with the scaled reference current source for generating a measured current (10x) whereby the amount of the measured current is a function of the first voltage drop across the measurable circuit element 14 and the state of the measurable circuit element is determined by the difference between the scaled reference current (produced by source V) and the measured current (10x).

Re claim 6, Johnson discloses replicate circuit including threshold current source 32 with feedback 31 for adjusting current.

Re claim 7, Johnson discloses trim circuit has a scaled current source (V) coupled to measurable current source (36).

Re claim 8, Johnson discloses all of the claimed limitations including first sense voltage (V_{ref}) being supplied to second input (+) of amplifier 38 configured to generate an output

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proportional to the difference between measured voltage proportional to voltage across element 14 and the sense voltage (V_{ref}).

Re claim 9, Johnson discloses replicate circuit having similar electrical characteristics (resistors) and adjustable test current (35,32,33,31).

Re claim 11, Johnson discloses apparatus (Fig. 5) comprising adjustable test current source (35) for generating test current (x) a replicate element (33,34) coupled with the test current source (35) for receiving test current and generating a first voltage drop across the replicate element (33,34) where feedback (31) is provided for adjusting test current (x), a test current source (36) configured to generate test current ($10x$) proportional to the adjustable test current (x), and a measurable element (14) coupled with the test current source (36) for receiving the test current ($10x$) whereby a second voltage drop across the measurable element (14) defines a state (resistance) of the measurable resistance.

Re claim 17, Johnson discloses first reference voltage V_{REF} a first amplifier (38) having first and second input with first input (-) coupled to measurable element (14) for receiving a voltage proportional to second voltage drop (voltage across resistor 14) and second input (+) receiving first reference voltage V_{REF} , and the amplifier (38) configured to generate an output voltage proportional to the potential difference between first input and reference voltage V_{REF} .

Re claims 20,28 Johnson discloses first reference voltage V_{REF} a first amplifier (38) having first and second input with first input (-) coupled to measurable element (14) for receiving a voltage proportional to second voltage drop (voltage across resistor 14) and second input (+) receiving first reference voltage V_{REF} , and the amplifier (38) configured to generate an output voltage proportional to the potential difference between first input and reference voltage V_{REF} .

Re claim 12-16, 21, 25-27 Johnson discloses apparatus for improving the accuracy of the circuit (Fig. 5) comprising a test current source 36, a measurable element (14) coupled to test current source 36, measurable element generating a first voltage drop across the element 14, a scaled reference current source (17), whereby the measurable voltage difference across resistance 14, is dependent on the difference between the measurable current ($10x$) and the reference current (produced by source V) (17).

Re claim 22, 29-30 Johnson discloses adjustable test current source 35 coupled to test current source 36 for developing an adjustable test current ($10x$) dictated by the level of adjustable test current (x).

Re claim 23, Johnson discloses replicate element (33,34) coupled with current source (35,36).

Re claim 24, Johnson discloses adjustable test current receiving a feedback 31 and generating second voltage drop across replicate element 33,34.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10, 18-20, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US 5,059,916) in view of Ozguc (US 6,130,541).

Re claims 10,19,31 Johnson discloses all of the claimed limitations as set forth above except second amplifier.

Ozguc in an analogous art for measuring the state of an element (capacitance) discloses a second amplifier (525) coupled to a replicate element (C_{INT}) produces an output voltage which is used 526 for adjusting an adjustable test current ($Xk1$)(522) input to measurable element (C_L) for accurately measuring the state of the element (C_L) (Fig. 5).

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Johnson by adding a second amplifier disclosed by Ozguc for adjusting the level of test current input to a measurable element for accurately measuring the state of the element.

Pertinent Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

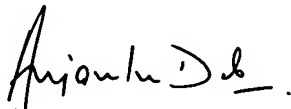
Zabroda (US 6,343,024 B1) discloses circuit for determining the state of element R_L (impedance) comprising adjustable test current source (M1,M2), replicate element R2 and feedback (12,28) for adjusting the level of test current applied to element R_L (Fig. 1B)(Fig. 2A1).

Ueda (US 5,877,617) discloses circuit for determining state of an element 2 (load) comprising adjustable current source 3 for supplying current to element 2, adjustable current is coupled to replicate circuit (sense) comprising adjustable current source 4 and feedback 6,7 for controlling the level of current applied to element 2 (Fig. 1).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Anjan K. Deb whose telephone number is (703) 305-5219. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le, can be reached at (703)-308-0750.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone numbers are (703)-308-0956 and (703)-305-4900.



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1/28/04

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